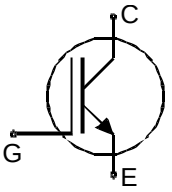
SIGC42T170R3

IGBT^3 Chip

FEATURES:
- 1700V Trench + Field Stop technology
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling

This chip is used for:
- power module

Applications:
- drives



Chip Type	V_{CE}	I_{Cn}	Die Size	Package	Ordering Code
SIGC42T170R3	1700V	29A	6.5 x 6.46 mm^2	sawn on foil	Q67050-A4151-A001

MECHANICAL PARAMETER:

Raster size	6.5 x 6.46	mm
Emitter pad size	4.27 x 4.27	
Gate pad size	1.18 x 1.09	
Area total / active	42 / 28.7	mm^2
Thickness	190	µm
Wafer size	150	mm
Flat position	180	grd
Max.possible chips per wafer	338 pcs	
Passivation frontside	Photoimide	
Emitter metalization	3200 nm AlSiCu	
Collector metalization	1400 nm Ni Ag –system suitable for epoxy and soft solder die bonding	
Die bond	electrically conductive glue or solder	
Wire bond	Al, <500µm	
Reject Ink Dot Size	∅ 0.65mm ; max 1.2mm	
Recommended Storage Environment	store in original container, in dry nitrogen, < 6 month at an ambient temperature of 23°C	

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SIGC42T170R3

MAXIMUM RATINGS:

Parameter	Symbol	Value	Unit
Collector-emitter voltage, T_j=25 °C	V_{CE}	1700	V
DC collector current, limited by T_{jmax}	I_C	1)	A
Pulsed collector current, t_p limited by T_{jmax}	I_{cpuls}	87	A
Gate emitter voltage	V_{GE}	±20	V
Operating junction and storage temperature	T_j, T_{stg}	-55 ... +150	°C

1) depending on thermal properties of assembly

STATIC CHARACTERISTICS (tested on chip), T_j=25 °C, unless otherwise specified:

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V , I_C= 1.5mA	1700			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=29A	1.6	2	2.4	
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C=1.2mA , V_{GE}=V_{CE}	5.2	5.8	6.4	
Zero gate voltage collector current	I_{CES}	V_{CE}=1700V , V_{GE}=0V			2	µA
Gate-emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			600	nA
Integrated gate resistor	R_{Gint}			8		Ω

ELECTRICAL CHARACTERISTICS (tested at component):

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	C_{iss}	V_{CE}=25V,		2500		pF
Output capacitance	C_{oss}	V_{GE}=0V,		105		
Reverse transfer capacitance	C_{rss}	f=1MHz		84		

SWITCHING CHARACTERISTICS (tested at component), Inductive Load

Parameter	Symbol	Conditions 1)	Value			Unit
			min.	typ.	max.	
Turn-on delay time	$t_{d(on)}$	T_j=125°C		400		ns
Rise time	t_r	V_{CC}=900V,		50		
Turn-off delay time	$t_{d(off)}$	I_C=29A,		800		
Fall time	t_f	V_{GE}=-15/15V, R_G= 18Ω		300		

1) values also influenced by parasitic L- and C- in measurement and package.

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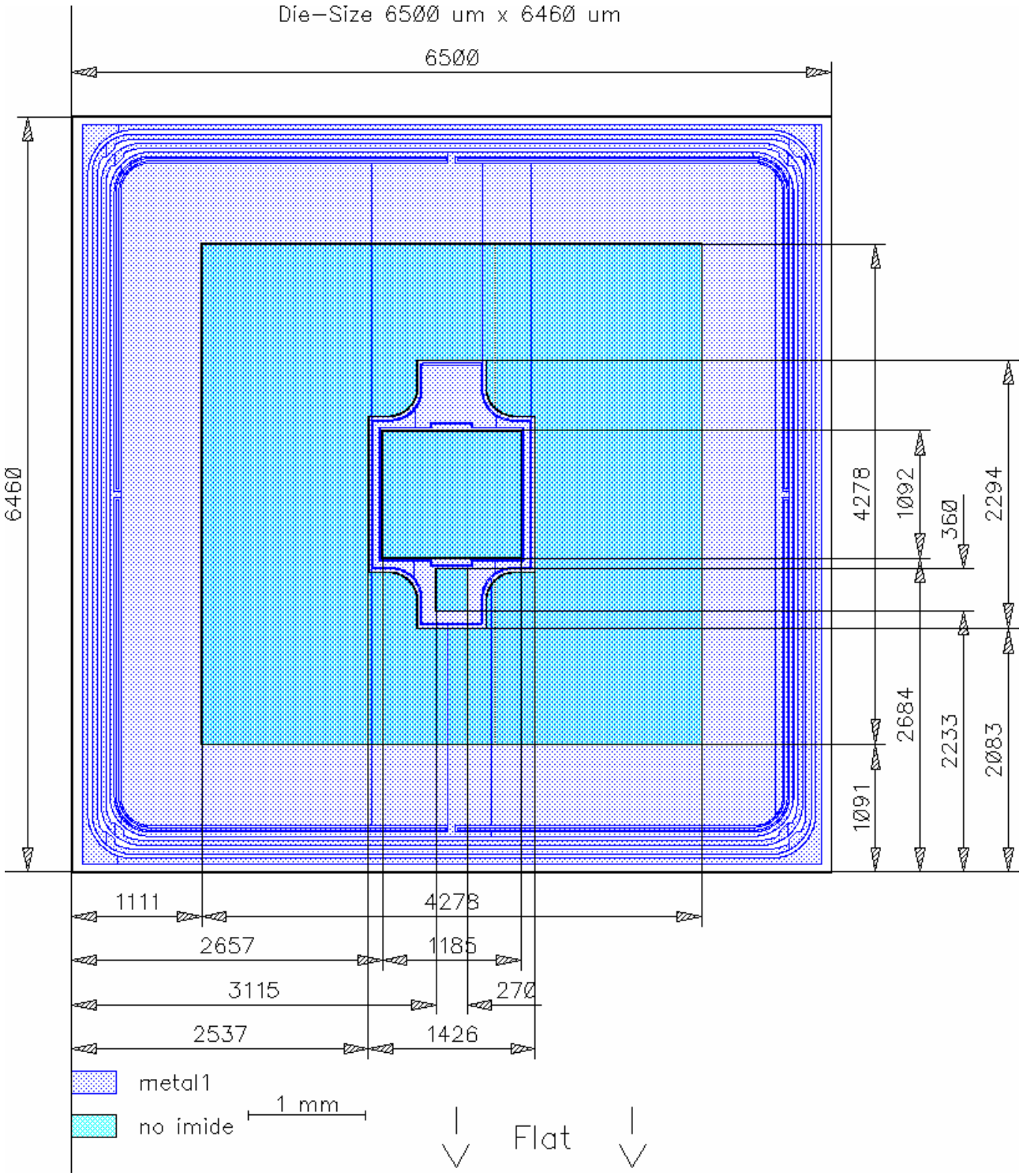
CHIP DRAWING:



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FURTHER ELECTRICAL CHARACTERISTICS:

This chip data sheet refers to the device data sheet		

DESCRIPTION:

AQL 0,65 for visual inspection according to failure catalog
Electrostatic Discharge Sensitive Device according to MIL-STD 883
Test-Normen Villach/Prüffeld

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